

alkalis. The lipoids contained by bacteria, because of their effect on surface tension, are probably concentrated round the periphery of the bacterial cells, and form a protective covering to the organism. This fatty envelope protects them from proteolytic ferments, but once this has been removed active proteolysis takes place. High temperatures and drying cause a redistribution of the lipid-protein complex, and thus, for physical reasons, disturb the protective mechanism. Therefore the antitryptic property of bacteria depends on totally different factors from the antitrypsin of egg white and blood serum.

Teale and Bach⁷ showed that the antitryptic power of egg white was due to the presence of a non-diffusible protein substance which is not affected in the dry state by treatment with lipid solvents. The same observers showed that the antitrypsin of blood serum was not dependent on the lipoids present.

Although lipid solvents appear to destroy the antitrypsin of blood serum, they do this by coagulating the proteins. Drying had no effect on the antitrypsin of blood serum, nor was it destroyed by lipid solvents when precautions were taken to prevent protein coagulation.

The greater resistance of Gram-positive bacilli to lipid solvents and heat is also capable of explanation on the basis of the physical dispersion of the lipoids.

Eisenberg⁸ found that staphylococci became Gram-negative after extraction with ether and that *B. coli* could be made Gram-positive on treatment with lecithin. Benians⁹ observed that crushed Gram-positive organisms are promptly decolorized, and concluded that the condition of the cell wall is the factor determining resistance to Gram's stain.

In Gram-positive organisms it would appear, therefore, that the lipoids are more intimately bound to the protein of the bacterial cell, thus rendering them more resistant to lipid solvents.

In the second place, it is important to note that exposure to specific agglutinating serum or inflammatory lymph does not alter the protective mechanism of bacteria against proteolytic ferments. It is claimed by Jobling and Peterson¹⁰ that bacteria treated with immune serum and complement are so altered as to be made more digestible by trypsin. They state later that bacteria treated with an excess of immune serum and complement become more resistant to proteolysis. In my experiments with *B. typhosus*, *B. coli*, and *B. pyocyaneus* it was not found possible to render these organisms more digestible by trypsin through sensitization and complement action, although many attempts were made by increasing and decreasing the sensitization and varying the quantity of complement.

Conclusions.

1. Bacteria do not adsorb proteolytic ferments.
2. The protein of bacteria is protected from the action of proteolytic ferments by the lipoidal envelope with which they are surrounded. The agencies which destroy this protective mechanism act by disturbing the lipid distribution.
3. The antibodies present in immune serum do not in any way render bacteria more digestible by trypsin.

REFERENCES.

- ¹Kantorowicz: *Muench. med. Woch.*, 1898, 45, 1040. ²Kruse: *Ibid.*, 1910, 57, 685. ³Jobling and Peterson: *Journ. Exper. Med.*, 1914, 20, 452. ⁴Porter: *Quart. Journ. Exper. Physiol.*, 1910, 3, No. 4. ⁵Plimmer: *Pract. Organ. and Biochemistry*, 1920, p. 425. ⁶Teale and Bach: *Proc. Roy. Soc. Med.*, Path. Section, 1920, vol. xiii, p. 16. ⁷Teale and Bach: *Ibid.*, p. 41. ⁸Eisenberg: *Cent. f. Bakt.*, 1910, 56, 193. ⁹Benians: *Journ. Path. and Bact.*, 1920, 23, p. 401. ¹⁰Jobling and Peterson: *Journ. of Exper. Med.*, 1914, 20, 321.

THE third International Neurological Congress will be held at the Salpêtrière Hospital, Paris, on June 2nd and 3rd.

THE City of Paris has authorized an expenditure of 2,500,000 francs for the purchase of radium to be used in the public hospitals for the treatment of cancer.

THE seventh French Congress of Medical Jurisprudence will be held in Paris from May 29th to 31st under the presidency of Dr. Thibierge, when the following subjects will be discussed: (1) Laboratories of criminal anthropology and psychiatric departments in Belgian prisons, introduced by Professor Héger-Gilbert and Dr. Vervaeck of Brussels. (2) The spectroscopic in medical jurisprudence, introduced by Professor Zanger of Zurich and Dr. de Laet of Brussels. (3) Bone and joint tuberculosis and workmen's accidents, introduced by Dr. Robireau. Further information can be obtained from Professor Étienne Martin, 10, Rue du Plat, Lyons.

SLIPPING RIB.

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ABNORMAL mobility of the lower intercostal joints, causing painful symptoms, is probably not a rare condition, and it is curious that it should receive no mention in the modern textbooks of surgery—at least, I have failed to discover any reference to it in the numerous volumes that I have consulted. It is for this reason that I venture to report the following two cases which have come under my observation during the past year.

Slipping rib, as it may be called, is a trivial enough complaint in itself, but it gives rise to the most irksome symptoms, and my two patients were quite incapacitated by the excruciating pain which followed any attempts to do manual work. The pain is described as of a sharp, stabbing nature, giving place after a few moments to a dull ache, which lasts for a considerable time, and may, indeed, persist throughout the day, only disappearing after the night's rest. In its position at the costal margin it resembles that due to so many deeper lesions, both of the abdomen and the thorax, that I think it is quite likely that many cases occur in which such an apparently unimportant cause as a movable rib cartilage is unsuspected, and the diagnosis is missed. It was so in one of my cases, but the difficulty here was partly due to the fact that the patient, a woman, was known to have had definite abdominal disease in the past, and to the natural tendency to attribute subsequent symptoms to this disease: still, had I been acquainted before with slipping rib as a cause of abdominal pain I think I might have arrived at a correct diagnosis somewhat sooner than I did.

The treatment is simple, and consists in resection of the loose terminal portion of the rib cartilage. In both of my two cases this was followed by immediate and lasting relief of the symptoms.

CASE I.

A single woman, aged 42, employed as a domestic servant, was admitted into Guy's Hospital in September, 1921, for right-sided subcostal pain. This had first troubled her four years before, when she fell and bruised her side, and from that time it had been present more or less constantly, being most severe when she walked much or attempted to do heavy work. Recently any effort to use her right arm had brought on such severe pain that she was quite unable to work at all, and she said that when she lifted anything heavy one of her ribs seemed to jump out of place, and that frequently a painful swelling appeared at the lower margin of the ribs. This exact description was not elicited during the earlier stages of her illness, and the diagnosis was rendered less easy by the fact that in 1918 the appendix had been removed for a basal-celled carcinoma, which led to the suspicion that her pain was due to post-operative adhesions.

In August, 1920, when I first saw her with Dr. E. P. Poulton, we decided to explore the abdomen, but at the operation the stump of the appendix was found to be healthy, and the only abnormality discovered was prolapse of the caecum and ascending colon. I performed colopexy, but this naturally enough failed to relieve the symptoms, and it was only when, a year later, she volunteered the information about the slipping rib that the real cause of her pain became apparent. It was now obvious on palpation that the tip of the tenth rib cartilage could be freely moved upwards in front of the ninth, and that this movement produced the pain of which she had for so long been complaining. Removal of the terminal three inches of the rib cartilage effected a complete cure.

CASE II.

A girl, aged 17, complained of sudden acute pain in the left side whenever she bent forward or attempted to lift anything heavy. She stated that one of her ribs had been "out of place" for some months, and on examination it was clear that the tip of the tenth left costal cartilage slipped over the lower border of the ninth rib and jutted forward beneath the skin when she flexed her body. This slipping movement of the rib was accompanied by an acute twinge of pain, which left a dull ache under the rib margin for several minutes after the rib had fallen back into place. In this case, too, removal of the terminal portion of the cartilage was followed by complete relief of the symptoms.

Very definite conclusions cannot be drawn from two cases, but it is noteworthy that both of the patients were of the female sex, and that one gave a definite history of an injury as the starting point of her symptoms. In both the pain was referred to the exact position of the affected rib, the undue mobility of which could easily be demonstrated, and in both the symptoms tended to increase as time went on.